Marshall Star, July 6, 2011 Edition

MARSHALL STAR

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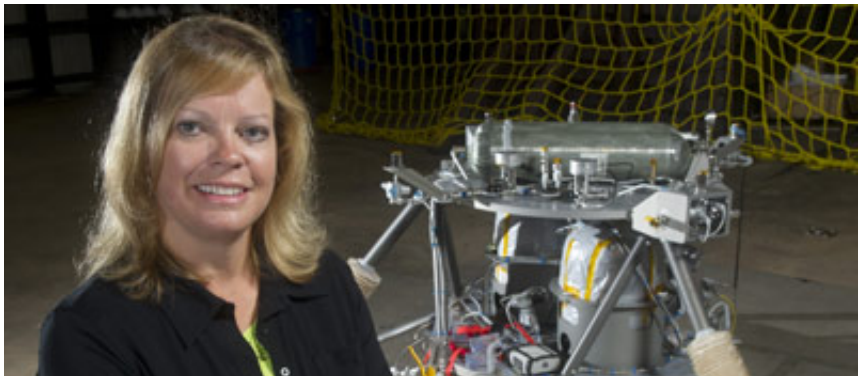
Historic Last Launch Date Nears for Atlantis

Space shuttle Atlantis, on the launch pad at NASA's Kennedy Space Center, is awaiting liftoff on its historic final journey. The 12-day STS-135 mission to the International Space Station is scheduled to launch July 8 at 10:26 a.m. CDT. STS-135 will be the 33rd flight of Atlantis, the 37th shuttle mission to the space station and the 135th and final mission of NASA's Space Shuttle Program. (NASA)

› Back to Top

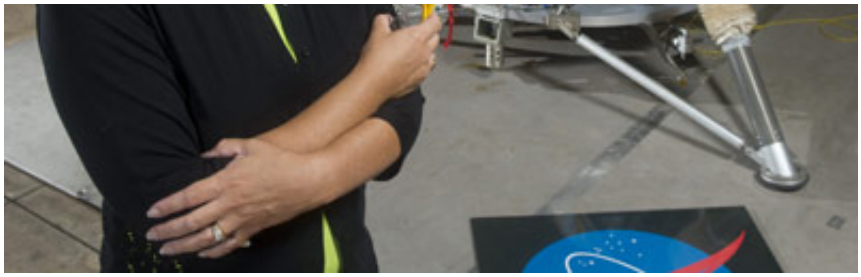
NASA Engineer Julie Bassler Heads Robotic Lander Project at Marshall

By Rick Smith



Growing up on a working farm in rural Breese, Ill., NASA engineer Julie Bassler constantly found her attention drawn away from the tranquility of farm life by the thunder of jets from nearby Scott Air Force Base, and she knew early on that her heart's ambition was not in the soil, but among the stars.

Image left: NASA engineer Julie Bassler shows off the robotic lander prototype now



being tested at the Marshall Center. (MSFC/Emmett Given)

Today, as manager of the Robotic Lunar Lander Development Project at the Marshall Space Flight Center, she is fulfilling that ambition -- and helping to create some unprecedented thunder herself. Bassler and her team have spent the past 21 months designing, developing and testing a sophisticated robotic lander prototype for a new generation of automated spacecraft capable of exploring and conducting science on the surface of the moon, near-Earth asteroids and other airless planetary bodies in the solar system.

In a U.S. Army propulsion test facility on Redstone Arsenal, Bassler gives the word, and a hissing roar fills the chamber as the latest robotic lander prototype lifts off. It's a blocky, metal tripod 4 feet tall and 8 feet in diameter, weighing roughly 700 pounds when fueled. It puts out nowhere near the 750 pounds of maximum thrust the final version will deliver, but nonetheless rises more than 6 feet and then hangs effortlessly in space. After just 33 seconds of controlled, autonomous flight, it descends. A short test -- but the assembled engineers and onlookers applaud. Bassler looks pleased.

Her team -- small and efficient, like the prototype itself -- remains on a record-setting development pace. It took them just 17 months to go from the drawing board to the first powered flight test of this warm-gas, peroxide-fueled prototype, nicknamed "MightyEagle." A cold-gas version was completed and tested in only nine months.

To date, the team has conducted approximately 160 flight tests. Bassler says they still clap at the end of nearly every one. It's hard not to. Hard, too, to miss why she traded farm life for a chance at a legacy in space, an opportunity to touch -- even remotely -- the soil and rock of worlds other than ours.

Bassler was a natural choice to lead the lander effort at Marshall. A 1988 graduate from Parks College of St. Louis University in St. Louis, Mo., where she received an undergraduate degree in aerospace engineering, she went on to earn a master's degree in space science in 1992 from the University of Houston in Texas. She worked for NASA contractors in Texas from 1990-1994 before accepting a full-time position at the Johnson Space Center in Houston in 1994. She transferred to the Marshall Center in 1997.

As deputy manager of Marshall's Lunar Precursor Robotic Program from 2006 to 2008, she helped oversee NASA's Lunar Reconnaissance Orbiter and Lunar Crater Observation Sensing Satellite, which flew to the moon in 2009 to map the surface and search for water ice, respectively. Those missions laid the groundwork for the new lander development effort, which began that same year.

Her prime advantage, she says, may have come much earlier -- back during those years as an Illinois farm girl with an eye on the stars. She credits her parents for setting her on a path to win the future.

"Living on a dairy farm, the clock never stopped on things to do," she remembers. "My parents taught me that if you work hard and expect good things, you will achieve the goals you set for yourself."

She credits much of the hard work on the lander project, and its successes to date, to a strong team, which includes Marshall Center engineers and partners at Johns Hopkins University's Applied Physics Laboratory in Laurel, Md., and the Von Braun Center for Science and Innovation in Huntsville. The Planetary Science Division of NASA's Science Mission Directorate in Washington directs the project.

And the hard work continues. Over the hot summer months, the lander prototype will fly higher and for longer durations, glide horizontally and descend 100 feet under its own power from an overhead crane, while the team assesses its sensors, avionics, software systems and integrated structures. Testing will conclude in late summer with a more complex series of

free flight tests, lasting up to 60 seconds each, on the Redstone Arsenal test range.

In the test chamber, Bassler calls to her team to start their post-flight tasks, already thinking ahead to the next one, and another step toward space.

Nearby, the lander waits -- ready to prove her parents right.

Read more about Bassler's team and their work here, and learn more about the project here.

Smith, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.

› Back to Top

Marshall Payload Operations Center Teams Honored by Expedition 26-27 Astronauts
By Lori Meggs

Teams from NASA's Payload Operations Center at the Marshall Space Flight Center were recently honored by the International Space Station's Expeditions 26 and 27 crew members and lead flight directors.

Image right: From left, Cat Gibson, a data management coordinator in the Payload Operations Center at the Marshall Center; Eric Morris, MELFI team member from Johnson Space Center; Jenn Whitworth, MELFI operations lead at Marshall; Ken Hartensteiner and Mark Albores, MELFI team members from Johnson; and Tim Cruse, data management coordinator at Marshall, were all recognized for their efforts to preserve science aboard the International Space Station. (Bill Lynch/JSC)

The crews and flight directors selected the teams for the important contributions each made to the success of the missions.

Presenting the awards at the Johnson Space Center's visitor center in Houston were Expedition 26 crew members Scott Kelly, Alexander Kaleri and Oleg Skripochka, whose mission lasted from October 2010 to March 2011, and Expedition 27 crew members Dmitry Kondratyev, Paolo Nespoli and Cady Coleman, who lived aboard the station from December 2010 to May 2011.

The Minus Eighty Degree Laboratory Freezer for ISS, or MELFI, and Automated Payload Switch #1 Anomaly Response Team were recognized for responding to failures of these space station components to save critical science data.

The Payload Operations Center at Marshall commands and controls payloads, or experiments, aboard the station. It is staffed around the clock -- except on Christmas Day -- to provide support to the space station crew members performing experiments. For some, Christmas Day 2010 was not the "normal" off day it had been in the past. To seamlessly support the crew aboard the station, flight controllers in the operations center set onboard configurations to allow data to be routed and recorded on that day. However, an unexpected change to the payload data and video systems' configuration occurred due to a "solar radiation hit," referred to as a Single Event Upset. The configuration of the Automated Payload Switch #1 was changed by this event and there was no way to automatically correct it. The switch is a component of the onboard data system that uses fiber optics to route data from a source to its destination. This event interfered with the data pathway from the space station to Marshall and the Johnson Space Center.

Since the Payload Operations Center manages the commands to this switch, the flight director at Johnson immediately contacted the Marshall's lead payload operations director to put the system back into configuration so no data would be lost. Tim Cruse, the lead for the Data Management Control team -- responsible for the onboard data and video systems -- came in on Christmas Eve night to do just that. However, no commands could be sent, so the Johnson flight director requested Cruse remain on his flight console at Marshall and monitor the Emergency, Caution, and Warning data, since the Payload Operations Center was the only facility receiving that information at the time. Cat Gibson, another certified data management coordinator, came in to the control room around 4 a.m. on Christmas Day to relieve Cruse. When the ground system was restored approximately four hours later, Gibson sent the final commands to complete the needed reconfigurations.

At the awards ceremony, Cruse and Gibson were both recognized for their efforts.

Another Payload Operations team member, Jenn Whitworth, was recognized for her work in saving science in one of the three station freezers that had failed. The MELFI freezers are used to keep science samples frozen until they can be returned to Earth. One of these freezers, MELFI-2, experienced a failure in its electronics unit and required replacement. Whitworth, the MELFI operations lead, quickly worked with the MELFI Project Office to replace the failed unit. This quick response prevented the rack from being down longer than the documented constraint. If the rack were not returned to nominal operations, those valuable science samples stored within it would have been lost. The rack was recovered before the time constraint was reached and all the science was preserved. A few days later, however, the unit failed again, and Whitworth worked to develop a new plan to move the samples to another freezer.

The Increment 27 Payloads Planning Team from Marshall also was recognized for its excellent work responding to late changes in onboard timelines and priorities during this year's April 27 tornado outbreak. The payload planning team consistently provided quick and high-quality inputs, even in the midst of a natural disaster, resulting in a significant increase in completion of onboard science objectives.

"We are so proud of these teams and are happy to see them get the due recognition they deserve," said Lybrease Woodard, manager of Marshall's Payload Operations. "We know how hard our teams work to accomplish science goals each and every day, and it’s gratifying to know the crew and the team at Johnson sees that as well."

Meggs, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.

› Back to Top

Shuttle Propulsion Managers Reflect on Final Shuttle Mission in July's 'Focus on Marshall'

On the recent edition of the Marshall Space Flight Center’s video program "Focus on Marshall," co-hosts Lori Meggs and Bill Hubscher reminisce with current Shuttle Propulsion managers and Marshall Center Director Robert Lightfoot at the Kennedy Space Center before the launch of STS-134 regarding the approaching end of the shuttle program.

Image left: Space Shuttle Reusable Solid Rocket Booster Manager David Beaman, left, is interviewed by "Focus on Marshall" co-host Lori Meggs in front of the final booster/external tank stack in the Vehicle Assembly Building at the Kennedy Space Center, Fla. (NASA)

After 30 years of successfully supporting the country's space goals, the shuttle program comes to an end with the launch of STS-135. From Kennedy Space Center, viewers will see Atlantis, the final tank/booster stack and main engines, and hear from shuttle managers about some of their favorite memories and proudest moments. "Focus on Marshall" will talk with David Beaman, Steve Cash, Jerry Cook, John Honeycutt, Helen McConnaughey, Jody Singer and Robert Lightfoot.

The program will air on Marshall TV July 7, 12, 14, 18 and 21 at 11 a.m., noon and 1 p.m. The series is available on NASA TV, Inside Marshall and on the NASA Portal.

› Back to Top

Marshall Association to Welcome Former NASA Associate Administrator July 29

Alan Stern, former associate administrator for NASA's Science Mission Directorate and principal investigator for the New Horizons mission to Pluto, will be the guest speaker at a Marshall Association luncheon set for July 29. All Marshall Space Flight Center team members are invited to attend.

The luncheon will be held from 11 a.m. to 1 p.m. More details will be available soon on ExplorNet and Facebook.

Stern served as associate administrator for NASA's Science Mission Directorate in Washington from 2007-2008. In 2007, he was listed among Time Magazine's "100 Most Influential People in the World." During his NASA tenure, he was involved in 24 suborbital, orbital and planetary space missions, including eight for which he served as principal investigator. His research has focused on studies of the outermost elements of our solar system, including the Kuiper Belt, the Oort Cloud, Pluto and the moons of the outer planets. He also has led the search for evidence of solar systems around other stars.

The Marshall Association is the professional, employee service organization at the Marshall Center. Civil service employees and contractors at the center can learn more about the association here.

Find this article at:

http://www.nasa.gov/centers/marshall/about/star/index.html